



Australian Government

Department of Education, Employment and Workplace Relations

AHCIRG426A Evaluate water supply for irrigation

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This Unit of Competency specifies the outcomes required to evaluate a water supply for an irrigation operation and defines the standard required to: determine the amount required and quality parameters for irrigation water; carry out water sampling and analyse the results; compare costing and delivery arrangements for alternative water sources; and complete purchasing arrangements.

Application of the Unit

This Unit applies to irrigation operations managers who are responsible for sourcing irrigation water and analysing its suitability and cost.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This Unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Determine water needs for irrigation	1.1 The water needs of plants to be irrigated are determined 1.2 The permeability of the soil and deep drainage losses are calculated 1.3 Evapotranspiration rates are calculated through the growing season 1.4 Soil water deficits throughout the season are calculated based on expected rainfall 1.5 The amount of irrigation water required through the growing season is calculated
2 Assess a water source for water quality	2.1 Water source is tested for electrical conductivity and results analysed 2.2 Water source is tested for ionic composition and results analysed 2.3 Water source is tested for biological composition and results analysed
3 Determine cost and availability of alternative water sources	3.1 Water availability and access requirements are evaluated for water sources 3.2 Capital expenditure requirements are costed for water sources 3.3 Operating expenditure requirements are costed for water sources 3.4 Regulatory requirements for purchasing irrigation water are investigated and incorporated into business planning
4 Complete water sourcing and/or acquisition arrangements	4.1 Contractual arrangements are made for purchase or sourcing of water 4.2 Planning is carried out for short term purchasing or selling of water depending on seasonal conditions if necessary

Required Skills and Knowledge

This section describes the skills and knowledge required for this Unit.

Required skills include:

Ability to:

- apply basic principles of hydraulics to the selection of irrigation systems, legal access and structures
- take water samples
- analyse results for electrical conductivity and ionic composition of irrigation water
- estimate the irrigation requirements of plants
- calculate water losses in an irrigation system
- compare costs for different water sources
- calculate capital and operating expenditure for a water supply system
- carry out purchasing of water rights.

Required knowledge includes:

Knowledge of:

- plant water requirements in terms of water quality and frequency of supply
- types of irrigation systems
- selection of irrigation systems
- irrigation drainage, seepage, surface and subsurface drainage systems
- salinity and ionic composition impacts on soil structure and plant growth
- conveyance and disposal of drained effluent
- re-use systems, management of irrigation systems
- operations and maintenance requirements.
- water supply potential for the development of irrigation systems
- management planning and operation of water allocations
- water law
- cost benefit analysis
- capital and operating expenditure calculations to source water
- environmental and energy-use implications of resource utilisation and development
- efficiency of irrigation systems and long-term viability
- climatic factors in irrigation development, rainfall, evaporation, evapotranspiration and hydrology
- plant physiology and plant water use, transpiration crop water requirements in terms of water quality and quantity
- soils and water, soil moisture retention and movement, plant root zones and development, infiltration and leaching
- irrigation scheduling, soil moisture measurement.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this Unit	The evidence required to demonstrate competency in this Unit must be relevant to workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following: • determine the amount required and quality parameters for irrigation water • carry out water sampling and analyse the results • compare costing and delivery arrangements for alternative water sources • complete purchasing arrangements.
Context of and specific resources for assessment	Competency requires the application of work practices under work conditions. Selection and use of resources for some worksites may differ due to the regional or enterprise circumstances.

Range Statement

The range statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
<i>Water sources</i> may include:	• town water • permanent watercourses • storages • underground water • recycled water.

Unit Sector(s)

Irrigation